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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,480	06/28/2001	Giuseppe Colombo	05788.0170	2907

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EXAMINER	
BLANTON, REBECCA A	
ART UNIT	PAPER NUMBER

1762  
DATE MAILED: 03/05/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/892,480

Applicant(s)

COLOMBO ET AL.

Examiner

Rebecca A. Blanton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-66 is/are pending in the application.
- 4a) Of the above claim(s) 49-66 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 34-38, 40-42, 47 and 48 is/are rejected.
- 7) ☒ Claim(s) 39 and 43-46 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 34, 43, and 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 34, it is unclear to the examiner what is meant by "substantially static spraying chamber." Additionally, it is unclear to the examiner what is meant by "substantially static mixing means" and "substantially complete absorption." It is unclear from this language what the claim encompasses.

Regarding claim 43, it is unclear to the examiner what is meant by "substantially pyramidal central body." It is unclear from this language what the claim encompasses.

Regarding claim 45, it is unclear to the examiner what is meant by "substantially perpendicularly." It is unclear from this language what the claim encompasses.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 34-38, 40-42, and 47-48 rejected under 35 U.S.C. 103(a) as being unpatentable over Hiorth (U.S. 4,191,480) in view of Tate et al. (U.S. 4,035,322) and in further view of Murata et al. (U.S. 5,230,735).

Hiorth discloses an apparatus that functions as a mixer and a particle-coating device (abstract). Hiorth teaches that the particles flow continuously through the mixing device where they are sprayed with the coating solution (Figure 2 and column 4 lines 13-35). The coating chamber, taught by Hiorth, is a static spraying chamber (abstract). Hiorth discloses that the particles are at least partially coated with the coating solution

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(column 4 lines 13-35). However, Hiorth does not teach the presence of an additional mixing chamber, nor does the reference disclose the presence of a drying chamber. Tate et al. disclose a method for coating polyethylene pellets with a liquid curing agent (abstract). In column 3 lines 23-32, the reference teaches that the pellets are sprayed with the curing agent and then they are passed to an agitation chamber where the pellets are mixed until they are all coated with a predetermined amount of curing agent. Tate et al. teach that the curing agent penetrates and diffuses into the pellets as a result of the mixing (column 3 lines 47-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to move the coated particles, taught by Hiorth, into a mixing chamber, in view of the teaching of Tate et al. that the mixing allows the coating agent to coat each particle, as well as facilitates the diffusion of the coating material into the pellets.

While both references disclose methods for coating particles, neither reference discloses the use of a drying chamber after mixing the particles together. Murata et al. disclose a particle coating apparatus that comprises a coating chamber and a drying chamber (abstract). The reference teaches that the particles may be added into the top of the apparatus where they are coated as they travel down through the cylindrical coating portion, and are dried in a bottom chamber (column 2 lines 46-68 and column 3 lines 1-11). The cylindrical portion of the apparatus, disclosed by Murata et al., can be used to disperse and mix agglomerated particles (column 9 lines 54-68). In column 1 lines 38-68, Murata et al. teach that the drying apparatus prevents agglomeration of the coated particles. It would have been obvious to one of ordinary skill in the art at the

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time the invention was made to dry the particles, after coating them in the apparatus taught by Hiorth, and mixing them, as taught by Tate et al., in view of the teaching of Murata et al. that drying the particles after coating them helps prevent agglomeration of the coated particles.

Referring to claim 35, Hiorth does not teach the presence of additional mixing and drying chambers down stream. Tate et al. disclose a mixing device that is down stream in a different chamber from the coating device (column 3 lines 23-32). Murata et al. additionally disclose that the drying portion of the apparatus is downstream of the coating/mixing zone (abstract and column 3 lines 1-11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to first coat the particles, as taught by Hiorth, followed by mixing the particles in a separate chamber, as taught by Tate et al., followed by drying the particles down stream from the mixing section, as taught by Murata et al., to ensure that the coating material coat and impregnates the particles before it is then dried to prevent agglomeration.

Referring to claim 36, Hiorth discloses that the particles flow downward, by gravity, through the coating device (Figure 2). Murata et al. disclose that the particles flow downwardly, by gravity, from the coating/mixing chamber to the drying chamber (Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to allow the particles to flow downwardly through the particle coating apparatus, in view of the teaching of Hiorth that the coated particles flow downwardly through the coating device, and the teachings of Murata et al. that the coated particles flow downwardly through the coating apparatus into the drying system.

Referring to claim 37, Hiorth discloses that there are multiple coating injectors that spray the coating liquid (Figure 2 and column 4 lines 20-25).

Referring to claim 38, Hiorth does not specifically disclose the diameter of the liquid coating droplets that are sprayed onto the coating material. However, the diameter of the droplets is a direct measure of the size of the droplets, which is a result effective variable. If the droplets are too large, they will cause the particles to agglomerate, and will not coat the particles evenly. If the droplets are too small they may not coat the particles efficiently because less of the droplets will contact the substrate particles. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the optimum size of the coating droplets through routine experimentation, in the absence of unexpected results, and to use droplets of an appropriate size to allow them to coat the particles without causing the particles to agglomerate.

Referring to claim 40, in Figure 1 and column 2 lines 63-65, Hiorth teaches that the particles to be coated are separated into a plurality of streams that flow into the spraying chamber.

Referring to claim 41, Hiorth does not disclose the coating temperature. However, the coating temperature is a known result effective variable. If the coating temperature is too high, the coating will deteriorate and will not function properly. However, if the coating temperature is too low, the coating material will thicken and will not properly coat the particles. Additionally, if the substrate particles are in a softened state, the coating material more readily impregnates the particles. Therefore, it would

have been obvious to one of ordinary skill in the art at the time the invention was made to determine the optimum coating temperature through routine experimentation, in the absence of unexpected results, and to pick a temperature below the temperature at which the coating material begins to deteriorate, but higher than the softening temperature of the particles to allow the coating composition to coat and impregnate the substrate particles.

Referring to claim 42, Hiorth does not disclose a time for spraying and mixing or drying the coated particles. However, the time is a known result effective variable. If the particles are not mixed for a long enough period, the coating will not be properly distributed among the particles. However, mixing the particles for a longer time than it takes to fully distribute the coating wastes time, which is not cost-effective. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the optimum time for mixing the particles through routine experimentation, in the absence of unexpected results, and to use a mixing time long enough to distribute the coating among the particles, but short enough to limit extra costs. The time for drying is also a known result effective variable. If the drying time is too small, the particles will not be fully dry and may agglomerate when put together in a storage apparatus. However, if the drying time is too long, it also wastes time and is not cost-effective. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the optimum drying time through routine experimentation, and in the absence of unexpected results, and to choose a time that allows the particles to dry completely, but short enough to limit production costs.

Referring to claims 47 and 48, Hiorth does not disclose the types of particles and coatings. However, Tate et al. disclose coating polyethylene particles with a curing agent (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made in the absence of Hiorth teaching specific particles and coatings, to use polyethylene particles with a curing agent coating, as taught by Tate et al.

***Allowable Subject Matter***

Claims 39 and 43-46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 39, the applicant's limitation that the coating is sprayed at an injection frequency between 500 and 2000 strikes/min distinguishes over Hiorth because the reference teaches a continuous spray, as do Tate et al., and Murata et al.

None of the prior art of record teaches or makes obvious the applicant's claimed invention of spraying a coating liquid at an injection frequency of 500 to 2000 strikes/min into a static spraying chamber with plastic granules continuously flowing into the chamber, followed by passing the granules into a mixing chamber followed by a drying chamber.

Regarding claim 43, the applicant's limitation that the mixing of the granules is carried out in a static mixer comprising a substantially pyramidal central body with a plurality of baffles extending between the inner wall and the openings for the flow of the

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particles distinguishes over Hiorth because the reference, while teaching a substantially pyramidal central body, does not teach the presence of baffles.

None of the prior art of record teaches or makes obvious the applicant's claimed invention of a coating method that comprises a static spraying chamber with plastic granules continuously flowing into the chamber, followed by passing the granules into a mixing chamber followed by a drying chamber, where the mixing chamber comprises a substantially pyramidal central body with a plurality of baffles.

Regarding claims 44-45, the applicant's limitation that the mixing step is carried out by passing the coated particles through a plurality of mixing bars distinguishes over Tate et al. because the reference teaches mixing the particles by exposing them to turbulent air.

None of the prior art of record teaches or makes obvious the applicant's claimed invention of a coating method for particles that comprises a static spraying chamber with plastic granules continuously flowing into the chamber, followed by passing the granules into a mixing chamber followed by a drying chamber, where the mixing chamber comprises a plurality of mixing bars to mix the coated particles.

Regarding claim 46, the applicant's limitation that the coated particles are soaked after they are dried distinguishes over Hiorth, Tate et al., and Murata et al., because none of the references teaches soaking the particles after they are coated and dried.

None of the prior art of record teaches or makes obvious the applicant's claimed invention of a method of coating particles that comprises a static spraying chamber with plastic granules continuously flowing into the chamber, followed by passing the granules

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into a mixing chamber followed by a drying chamber, where the particles are soaked after they are coated and dried.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rebecca A. Blanton whose telephone number is 703-605-4295. The examiner can normally be reached on M - F (7:30am - 3:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on 703-308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

rab *RAB*  
March 1, 2002

  
**MICHAEL BARR**  
**PRIMARY EXAMINER**